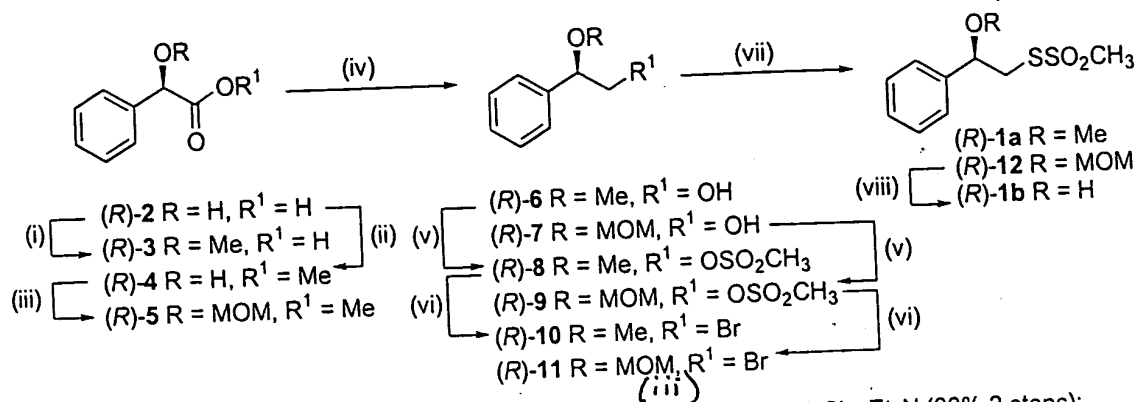


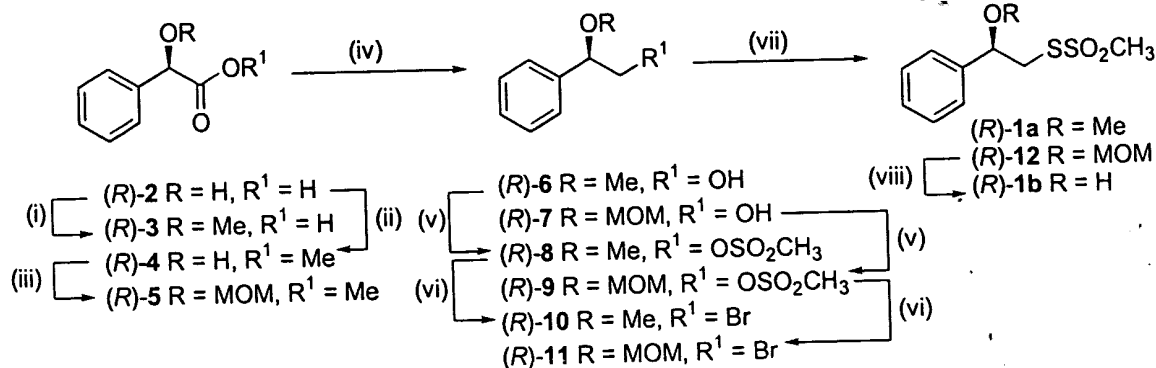
## Scheme 2. Synthesis of Mandelate-based Ligands



Reagents: (i)  $\text{Me}_2\text{SO}_4$ ,  $\text{NaOH}$ ,  $\text{H}_2\text{O}$ , 37%; (ii)  $\text{MeOH}$ ,  $\text{H}^+$ ; (iii)  $\text{MOM-Cl}$ ,  $\text{CH}_2\text{Cl}_2$ ,  $\text{Et}_3\text{N}$  (90% 2 steps);  
 (iv) For  $(R)\text{-}3$ :  $\text{BH}_3$ ,  $\text{THF}$ , 82%; For  $(R)\text{-}5$ :  $\text{LiBH}_4$ ,  $\text{THF}$ , 97%; (v)  $\text{MeSO}_2\text{Cl}$ ,  $\text{CH}_2\text{Cl}_2$ ,  $\text{Et}_3\text{N}$ ;  
 For  $(R)\text{-}8$ : 100%; (vi)  $\text{LiBr}$ , acetone; For  $(R)\text{-}10$ : 84%; For  $(R)\text{-}11$ : 78% 2 steps; (vii)  $\text{NaSSO}_2\text{CH}_3$ ,  $\text{DMF}$ ;  
 For  $(R)\text{-}12$ : 61%; (viii)  $\text{TFA}$ ,  $\text{H}_2\text{O}$ , 82%.

**Fig. 3**

## Scheme 2. Synthesis of Mandelate-based Ligands



Reagents: (i)  $\text{Me}_2\text{SO}_4$ , NaOH,  $\text{H}_2\text{O}$ , 37%; (ii) MeOH,  $\text{H}^+$ ; (iii) MOM-Cl,  $\text{CH}_2\text{Cl}_2$ ,  $\text{Et}_3\text{N}$  (90% 2 steps);  
 (iv) For (R)-3:  $\text{BH}_3$ , THF, 82%; For (R)-5:  $\text{LiBH}_4$ , THF, 97%; (v)  $\text{MeSO}_2\text{Cl}$ ,  $\text{CH}_2\text{Cl}_2$ ,  $\text{Et}_3\text{N}$ ;  
 For (R)-8: 100%; (vi) LiBr, acetone; For (R)-10: 84%; For (R)-11: 78% 2 steps; (vii)  $\text{NaSSO}_2\text{CH}_3$ , DMF;  
 For (R)-12: 61%; (viii) TFA,  $\text{H}_2\text{O}$ , 82%.

**Fig. 3**